CLAIMS

1. A method of diffusing sound in a space (100) in order to transmit in this space information in the form of acoustic waves representative of a signal X(t), by means of at least one acoustic enclosure (2) having at least one input (25) controlling a number n of loudspeakers (22,24), n being a natural integer greater than or equal to 1, this method comprising at least one step of sound diffusion during which an electrical signal $P(t) = W(t) \otimes X(t)$ is applied to the input of the acoustic enclosure (2) where:

- $\otimes$ is the mathematical convolution product operator and
- W(t) represents a filter template previously determined and memorised,

the said method comprising a training step during which the filter template is determined as follows:
$W(t) = S(-t) \otimes I(t)$, where

- S(-t) is the temporal return of the impulse response S(t) between the enclosure and a target zone (101) of the space (100) where sound is diffused, t representing the time,
- and I(t) is the temporal response of the product $e^{-2i\pi f t0}.Sc(f)$, where f represents the frequency, t0 is a time shift coefficient and $Sc(f)=1/(S1(f))^{\alpha}$, α being a non zero positive number and S1(f) being a real function obtained by clipping the module $|S(f)|$ of the response in frequency S(f) of the impulse response S(t).

2. A method according to claim 1, wherein during the training step the function Sc(f) is determined as follows:

. for Sfmoy . R2 < |S(f)| < Sfmoy . R1, $Sc(f) = 1/|S(f)|^{\alpha}$, R1 and R2 being two positive numbers, R1 being greater than R2 and Sfmoy being the mean value of |S(f)|,

. for $|S(f)| \leq$ Sfmoy . R2, $Sc(f) = 1/(Sfmoy \cdot R2)^{\alpha}$,

. for $|S(f)| \geq$ Sfmoy . R1, $Sc(f) = 1/(Sfmoy \cdot R1)^{\alpha}$.

3. A method according to any one of the preceding claims, wherein the coefficients R1 and R2 are chosen so as to obtain an amplitude excursion chosen from among an excursion of around 12 dB, an excursion of around 24 dB, an excursion of around 36 dB and an excursion of around 48 dB.

4. A method according to any one of the preceding claims, in which the quantity Sfmoy is calculated for a band of frequencies fb representing only a portion of the audible frequencies.

5. A method according to any one of the preceding claims, wherein the coefficient of the temporal shift t0 is comprised between 0 and Tmax, Tmax being the recording duration of the response S(t) .

6. A method according to any one of the preceding claims, wherein I(t) is obtained using the real part of the inverse Fourier transform of the product $e^{-2i\pi f t0}.Sc(f)$.

7. A method according to any one of the preceding claims, wherein
the impulse response S(t) is memorised on a number 2^k of samples, and S(f) is calculated from S(t), using a technique of fast Fourier transform of S(t).

8. A method according to any one of the preceding claims, wherein the impulse response S(t) is memorised on a number 2^k of samples and I(t) is calculated from the product $e^{-2i\pi f t0}.Sc(f)$ using a fast inverse Fourier transform technique.

9. A method according to any one of the preceding claims, wherein α equals 1.